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SCIENTIFIC BOOKS

THE ANTARCTIC EXPEDITION OF THE "DISCOVERY,"
UNDER CAPT. SCOTT, R.N., 1901-1904

The National Antarctic Expedition, 1901-4.
Natural History, Vol. II., Zoology (Vertebrata; Mollusca; Crustacea). London, The British Museum, 1907. 4°, 348 pp., 44 pl. Map and many illustrations in the text. Vol. III., Zoology and Botany (Invertebrata; Marine Algæ; Musci). 275 pp., 62 pl. 1907.

The British Museum having undertaken to publish and supervise the reports of the Antarctic Expedition under Capt. Scott, the two handsome and profusely illustrated volumes now under consideration comprise the first fruits of this arrangement. The Vertebrata are reported on by E. A. Wilson, W. P. Pycraft and G. A. Boulenger. Dr. W. G. Ridewood contributes an extensive memoir on *Cephalodiscus*, of which two new species were obtained. The Mollusca and Brachiopoda are treated by E. A. Smith, W. E. Hoyle and Sir Charles Eliot. W. T. Calman, A. O. Walker, G. S. Brady, Dr. Thiele and Professor Gruvel report on the Crustacea; L. V. Hodgson on the Pycnogonids; Dr. Trouessart on the Acari; Dr. Fowler on the Chætogonatha; Dr. von Linstow on the Nematodes; and Mr. A. E. Shipley on the Cestodes. The Cœlenterates are treated by Messrs. Hickson, Gravely and Rennie; the sponges by R. Kirkpatrick. Mr. and Mrs. Gepp undertake the Marine Algæ except a new species of *Lithothamnion* which is described by M. Foslie; while the scanty flora of mosses is the subject of a discussion by J. Cardot.

Each memoir is separately paginated and there is no general index.

It is obvious that, within the space available, only a brief survey can be given of such an aggregation of short reports. Professor Herdman introduces volume III., by a ten-page report on methods of collecting in Antarctic seas, which is well worthy of attention from those whose fortune it may be to prepare for such work under analogous conditions. The peculiar difficulties, due to the extremely low temperatures encountered, are

such as would often not be anticipated by collectors without experience in Polar seas, and offer an interesting field for experiment. It may be mentioned that the reviewer's experience in opening and keeping open holes in the ice at temperatures below minus 30° Fahr., leads to the belief that a soft iron or copper chisel of triangular section, hafted with a heavy pole of wood, is the most efficient. The extreme temperature seems to harden the soft metal sufficiently, without rendering it brittle as in the case of steel tools.

The reports on the marine mammals and birds are the most voluminous and contain perhaps the largest amount of material of general interest. The absence of the southern right whale from the icy seas is confirmed, but Mr. Wilson believes that Ross's report of its presence sixty years ago may, nevertheless, have been correct. The process of extermination of this species has been nearly successful, owing to the habit of whalers destroying the nursing young in order to secure the mother. The most common species are the finback, and a small Australian *Balæna*, but killers are plentiful and gregarious. A supposedly undescribed species of whale, with an extraordinarily long back fin, is illustrated and described, but not named, as is another probably new species of dolphin, resembling *Lagenorhynchus*.

The seals observed were the usual four Antarctic species, to which were added most unexpectedly a young male sea elephant, killed at McMurdo sound far from its usual haunts. Data are included on Hooker's sea lion which was studied at Laurie Harbor, Auckland Island *en route* to the Antarctic. All these animals are admirably illustrated by colored plates and sketches, as well as half-tone figures from photographs of the living animal.

Among Antarctic birds the penguins stand naturally preeminent, and the most remarkable of these is the great Emperor penguin, which attains a weight of ninety pounds. An extremely interesting account of the breeding habits of this species, hitherto hardly known, shows that it lays its single egg in the depth of

the southern winter. No nest is made, but the egg is held between the thighs of the parent, resting partly on the feet, enveloped by a loose fold of the abdominal integument, and pressed against a medial bare spot. The body temperature of the bird exceeds 100° Fahr., which is sufficient to incubate the egg during its long period of six or seven weeks.

When the mother bird feels the need of food she releases the egg, which is immediately seized by one of her associates, who broods it in the same manner. Thus a group of several birds cares for a single egg during the intense cold and darkness of the polar night. When the young is hatched the nestling continues to be brooded in the same way, and so eager are the birds to possess themselves of a young one that many of the chicks perish from the injuries sustained from the competing nurses. The young birds are fed by regurgitation. Eggs of this species, of which only a single specimen was previously known, are covered with a rough chalky layer and are of a pale green color, punctuated by numerous minute pores. The species lives entirely on the floe and pack ice. Their food appears to be chiefly crustacea, small fish and cuttlefishes, whose beaks, together with more or less gravel, are constantly found in the stomach. The other most familiar bird of the expedition was McCormick's Skua, a bold and most persistent thief, one of which followed the sledge party to latitude 80° 20' south, the only bird or beast met by the party during three months of solitude on the Polar ice cap. This species has the most southern range of any bird, and to the northward of the pack is replaced by the larger and darker-colored Antarctic Skua.

The fishes comprise ten species, mostly small, of which four are regarded as new.

The mollusks comprise about sixty species, about three fourths of which appear to be undescribed, the majority of which are small, dull-colored, and of the groups characteristic of Polar seas. Sir Charles Eliot finds two new genera, *Tritoniella* and *Galvinella*, among the Nudibranchs. Mr. Smith also reports two new genera among the Gastropods, *Neoconcha*, a peculiar Tænioglossate form, and *Tricho-*

concha, which very closely resembles the Arctic *Torellia*. He also adds two new Brachiopods to the species already known, both belonging to the genus *Magellania*.

We have already alluded to the extensive memoir by Dr. Ridewood on *Cephalodiscus*, a genus related to *Rhabdopleura*, in which two new subgenera are instituted, and two new species described.

Two shrimps, both previously found by the German Polar Commission at South Georgia, and four species of Cumacea are added to the list of Antarctic crustacea. The collection of amphipods numbers fifty-three species, of forty-three genera, of which four genera and eighteen species are new to science. As in Arctic waters the Lysianassidæ preponderate. A single species of *Nebalia* is noted by Thiele and nine species of Ostracoda are enumerated by Brady, seven of which are new.

Two species of sessile barnacles occur, both previously known, and two new species of *Scalpellum*.

The *bizarre* animals belonging to the Pycnogonida were represented by a large collection, including three new genera and twenty-eight species, including the anomalous *Decolopoda* of Eights, described seventy years ago, and which has five pairs of legs; a fact of which naturalists were long incredulous. Why Eights's generic name is not retained Mr. Hodgson does not explain.

Two specimens of Halacaridæ were dredged in Granite Harbor, which Trouessart believes to be identical or only subspecifically distinct from *Halacarus alberti* of the Arctic.

The Alcyonaria presented few remarkable features. Several of the forms appeared like connecting links between others formerly separated, as *Primnoisis* and *Ceratoisis*, *Primnoella* and *Caligorgia*. A single specimen of Pennatulid, *Umbellula carpenteri*, first made known by the Challenger Expedition, was obtained off the great ice barrier. The hydroid zoophytes were well represented by twenty-five species, most of which are of epizoic habit and nearly all from McMurdo Sound.

The species of sponges are distributed as follows: Tetractinellid, four species; Monaxi-

nellid, forty-three species; and Calcare, twenty-four species. There are no horny sponges, but some of the forms found were represented by a very large number of individuals. Of Hexactinellids there are ten species, all belonging to the Rossellidæ.

The number of marine algæ collected is but small, yet among them are some interesting novelties. The authors of the report upon them regard it as too early to attempt a comparison between the algal floras of the Arctic and Antarctic. Some of the species are, however, certainly identical. A single species of *Lithothamnion* collected proves new. Seven species of mosses were found, bringing up to the number of fifty-one, the total of Antarctic species.

These volumes form an admirable addition to our knowledge of Antarctica, and will prove a lasting monument to the energy and devotion of those who constituted the little band of explorers in this, the most dreary and inhospitable region of the entire globe.

W. H. DALL

SCIENTIFIC JOURNALS AND ARTICLES

University of California Publications in Zoology, Vol. 3, is made up in large part of "Contributions from the San Diego Marine Laboratory." It includes several papers of a faunistic nature with descriptions of many new species from the pelagic fauna of the San Diego Region; on the littoral and pelagic Ostracoda and on the Cladocera by Chancey Juday, on the Copepoda by C. O. Esterly and on the Dinoflagellata by C. A. Kofoid. A list of "The Marine Fishes of Southern California," by E. C. Starks and E. L. Morris contains notes on the ecology and distribution of 246 species. A paper by H. B. Torrey on the California Shore Anemone (*Bunodactis xanthogrammica*) discusses the synonymy and occurrence of a widely distributed anemone. Mr. C. O. Esterly in "Some Observations on the Nervous System of Copepoda" describes the innervation of the aesthetascs of Copepod antennæ and ascribes a sensory function to the rostral prongs of *Diaptomus* and to certain furcal bristles of *Cyclops*, but finds no

sensory nerve supply to the so-called tactile bristles of the antennæ. "A Discussion of Species Characters in *Tripsolema*," a group of bizarre organisms belonging to the Dinoflagellates, by C. A. Kofoid, calls attention to the "unit" nature of specific characters, to their non-adaptive significance, to the coincident distribution of related species and to the support which these facts lend to the Mutation Theory. The same author finds in a second paper on "The Significance of the Asymmetry of *Tripsolema*," that this is an adaptive structure which presents against the action of gravity the maximum vertical projection of the body on sinking and therefore delays descent from the illuminated upper strata of water to abyssal regions. In a paper by H. B. Torrey and Ann Martin on "Sexual Dimorphism in *Aglaophenia*" definite structural differences are shown to exist between the corbulae of male and female colonies in the four California species. In each species, the leaflets of the male corbulae are less completely fused than in the female, leading to a readily recognizable dimorphism. The purpose of "Biological Studies on *Corymorpha*, II., The Development of *C. palma* from the Egg" by H. B. Torrey was to discover (1) to what extent the form of the species might be determined by its activities, and (2) to compare the normal embryonic processes with those which appear in the regenerative development. The embryonic development is characterized by the plasticity of the tissues. The regions of the body, the tentacles, frustules, peripheral canals, axial endoderm, are molded largely out of more or less differentiated epithelial tissues without recourse to residual cells. These plastic processes are accomplished by various mechanical factors, including absorption of water, osmotic pressure, and amoeboid movement.

Terrestrial Magnetism and Atmospheric Electricity for March contains a portrait of Roald Amundsen, and the following articles: "Concerning Pulsations of Short Period in the Strength of the Earth's Magnetic Field," by H. Ebert; "Contribution to the Study of the Effects produced on the Magnetic Declina-